

Recovery Plan Action Status

Plan Name: Recovery Plan for the Wahiawa Plant Cluster: *Cyanea undulata*, *Dubautia pauciflora*, *Hesperomannia lydgatei*, *Labordia lydgatei*, and *Viola helenae*

Plan Status: Final

Plan Date: 31-May-94

Lead Agency: USFWS

Lead Office: Pacific Islands Fish And Wildlife Office

(408)

(792-9400)

Species	Action Priority #	Action #	Action Description	Action Status	Est. Initiation Date	Est. Completion Date	Responsible Parties	Work Type	Labor Type	Action Comments
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	1	11	Negotiate a cooperative agreement with McBryde Sugar Co.	Complete	FY 1995 - FY 1999	FY 2000 - FY 2004	U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources, McBryde Sugar Co.	Acquisition: Management Agreement	Internal Administrative, Internal Technical Assistance, Species Expert	TNCH initiated the development of the Kauai Watershed Alliance, of which McBryde Sugar is a participating member.
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	1	1311	Manage Wahiawa populations: Construct and maintain fencing	Ongoing Not Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Management: Habitat Maintenance and Manipulation, Management: Predator and Competitor Control	Contract, Internal Field Assistance, Internal Technical Assistance, Volunteer	TNCH and ES have an agreement with Alexander and Baldwin, the owners of McBryde Sugar, to fence the Kanaele Bog area of Wahiawa. Fencing of the surrounding forested area is also needed to protect all five species in this recovery plan.
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	1	1312	Manage Wahiawa populations: Establish a feral ungulate control program	Ongoing Not Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Management: Habitat Maintenance and Manipulation, Management: Predator and Competitor Control	Contract, Internal Field Assistance, Volunteer	There is currently an ungulate control program allowing hunting, but it is not adequate to control the pigs to low enough levels that the endangered species are not impacted.

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Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	1	1322	Manage Wahiawa populations: Monitor alien plants	Ongoing Not Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources, The Nature Conservancy of Hawaii, McBryde Sugar Co.	Management: Habitat Maintenance and Manipulation, Management: Predator and Competitor Control, Research: Management Techniques	Contract, Graduate Student, Internal Field Assistance, Internal Technical Assistance, Species Expert, Volunteer	
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	1	1323	Manage Wahiawa populations: Implement biological control of alien plants	Not Started			U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources, The Nature Conservancy of Hawaii, McBryde Sugar Co.	Management: Habitat Maintenance and Manipulation, Management: Predator and Competitor Control	Contract, Graduate Student, Internal Field Assistance, Internal Technical Assistance, Species Expert	This task has not yet started because no biological control methods are currently widely available for the alien species found at Wahiawa.
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei)	1	133	Manage Wahiawa populations: Consider slope stabilization	Ongoing Not Current	FY 2009		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources, The Nature Conservancy of Hawaii, McBryde Sugar Co.	Management: Habitat Maintenance and Manipulation	Contract, Graduate Student, Internal Field Assistance, Internal Technical Assistance, Species Expert	This task was initiated in 2009, but is still in initial assessment stage.

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Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	1	134	Manage Wahiawa populations: Implement cross-pollination as needed	Not Started			U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources, The Nature Conservancy of Hawaii, McBryde Sugar Co.	Management: Other	Contract, Graduate Student, Internal Field Assistance, Internal Technical Assistance, Species Expert	
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	1	135	Manage Wahiawa populations: Map and monitor all individuals	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, National Tropical Botanical Garden, Hawaii Department of Land and Natural Resources, The Nature Conservancy of Hawaii	Research: Population Surveys	Contract, Graduate Student, Internal Field Assistance, Internal Technical Assistance, Species Expert	This is an ongoing task, as the status of the species changes constantly, but it does not occur as frequently as it should - at least once a year.
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	1	15	Create/expand germplasm reserves	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, National Tropical Botanical Garden, Hawaii Department of Land and Natural Resources	Management: Propagation	Contract, Internal Field Assistance, Internal Technical Assistance, Species Expert	The existing ex situ collections are not genetically adequate for these species.
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	1	161	Survey for new and existing populations	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, National Tropical Botanical Garden, Hawaii Department of Land and Natural Resources	Acquisition: Management Agreement, Management: Habitat Maintenance and Manipulation, Management: Predator and Competitor Control	Contract, Internal Administrative, Internal Field Assistance, Internal Technical Assistance, Species Expert	A new population each of Labordia lydgatei and Hesperomannia lydgatei were found in Limahuli Valley in 1998. Additional surveys are still needed in suitable habitat areas for all five species.

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Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	1	162	Include newly discovered populations in management plans	Ongoing Not Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Management: Habitat Maintenance and Manipulation, Management: Planning, Management: Predator and Competitor Control	Contract, Internal Field Assistance, Internal Technical Assistance, Species Expert	The new populations of Labordia lydgatei and Hesperomannia lydgatei found in Limahuli Valley have been incorporated into the management of the Valley by NTBG, with grants from ES and DLNR.
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	2	21	Develop methods for control of alien weeds	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Management: Habitat Maintenance and Manipulation, Management: Predator and Competitor Control	Contract, Graduate Student, Internal Field Assistance, Internal Technical Assistance, Species Expert	Control of alien plants is an ongoing task that may be reduced to low maintenance and monitoring levels, but will never be completely eradicated, especially as new pest plant species are continually introduced to Hawaii and can become established in natural areas. Effective control methods are continually being developed by the Invasive Species Committees on each island and the results are applied to other natural areas.
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	2	22	Study life history and reproductive biology	Ongoing Not Current	Prior to FY 1995		Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Research: Demographic Studies, Research: Population Surveys	Contract, Graduate Student, Internal Field Assistance, Internal Technical Assistance, Species Expert	The current knowledge has been gathered mainly from incidental observations during field surveys and monitoring. More detailed experimental research is needed to fully understand this aspect of these species.

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Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	2	23	Study genetic variation and inbreeding suppression	Not Started			Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Research: Demographic Studies, Research: Genetics, Research: Population Surveys	Contract, Graduate Student, Internal Technical Assistance	
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	2	241	Determine impacts of alien weeds, if needed	Complete	Prior to FY 1995	FY 1995 - FY 1999	Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Research: Competition, Research: Habitat Requirements, Research: Management Techniques	Contract, Graduate Student, Internal Field Assistance, Internal Technical Assistance, Species Expert	While research on the impacts of alien plants directly on these five species are not known, the impacts to the wet forest and bog vegetataion in which these species occur are well understood, and therefore, additional work on this task is not necessary.
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Hesperomannia lydgatei)	2	242	Determine effects of lack of native pollinators	Ongoing Not Current	FY 2000 - FY 2004		Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Research: Demographic Studies	Contract, Graduate Student, Internal Field Assistance, Internal Technical Assistance, Species Expert	Current research by the University of Hawaii on the lack of bird pollinators seed set of Kauai plant species may benefit these five species.
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	2	244*	Determine the effects of rats on survival & reproduction	Not Started			Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Research: Predation	Contract, Graduate Student, Internal Field Assistance, Internal Technical Assistance, Species Expert	

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Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	2	251	Develop methods to enhance pollination and seed set	Ongoing Not Current	Prior to FY 1995		Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Research: Demographic Studies, Research: Propagation	Contract, Graduate Student, Internal Field Assistance, Internal Technical Assistance, Species Expert	The current knowledge has been gathered mainly from incidental observations during propagation, field surveys, and monitoring. More detailed experimental research is needed to fully understand this aspect of these species.
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	2	252	Develop methods to enhance germination	Ongoing Not Current	FY 2011		Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Research: Propagation	Contract, Graduate Student, Internal Field Assistance, Species Expert	Initiated for DubPau, HesLyd, and VioLan
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	2	253	Develop methods to reduce seed predation	Not Started			Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Research: Predation	Contract, Graduate Student, Internal Field Assistance, Internal Technical Assistance, Species Expert	
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	2	26	Determine propagation and reintroduction techniques	Partially Complete	Prior to FY 1995		National Tropical Botanical Garden, Botanical Gardens, Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Management: Propagation, Management: Reintroduction	Contract, Graduate Student, Internal Technical Assistance, Species Expert	All five species have been propagated in nurseries, but none have yet been reintroduced.

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Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	2	31	Determine populations to be increased	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Management: Planning, Management: Reintroduction	Contract, Graduate Student, Internal Field Assistance, Internal Technical Assistance, Species Expert	Any population of a short-lived perennial with fewer than 50 mature individuals and a long-lived perennial with fewer than 25 mature individuals that do not exhibit increased reproduction after the major threats are managed is considered for augmentation.
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	2	321	Select genetic stock for increasing populations	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Management: Planning, Management: Reintroduction	Internal Field Assistance, Internal Technical Assistance, Species Expert	This task is limited based on material available in ex situ collections.
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	2	322	Identify areas to increase numbers	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Management: Planning, Management: Reintroduction	Internal Field Assistance, Internal Technical Assistance, Species Expert	See task #31.
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	2	3231	Establish a mid-elevation propagation facility	Complete	Prior to FY 1995	FY 1995 - FY 1999	U.S. Fish and Wildlife Service, Ecological Services Division, National Tropical Botanical Garden, Hawaii Department of Land and Natural Resources	Management: Propagation	Contract, Internal Field Assistance, Internal Technical Assistance, Volunteer	
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	2	3232	Propagate appropriate genetic stock	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, National Tropical Botanical Garden, Hawaii Department of Land and Natural Resources	Management: Propagation	Contract, Internal Technical Assistance, Volunteer	This task is limited based on material available in ex situ collections.

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Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	2	324	Transplant nursery-grown plants	Ongoing Not Current	FY 2011		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Management: Reintroduction	Contract, Graduate Student, Internal Field Assistance, Internal Technical Assistance, Species Expert, Volunteer	This task has not been started for some species due to limited material available in ex situ collections.
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	2	325	Control alien weeds around new plants	Ongoing Not Current			U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Management: Habitat Maintenance and Manipulation, Management: Predator and Competitor Control	Contract, Internal Field Assistance, Volunteer	This task has not been started due to limited material available in ex situ collections.
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	2	326	Control seed predation in expanded populations	Not Started			U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Management: Predator and Competitor Control	Contract, Internal Field Assistance, Internal Technical Assistance, Species Expert	This task has not been started due to limited material available in ex situ collections.
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	2	41	Augment Current populations: Select introduction site(s)	Ongoing Not Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Management: Planning, Management: Reintroduction	Internal Field Assistance, Internal Technical Assistance, Species Expert	See task #31.
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	2	42	Augment Current populations: Secure new site(s)	Ongoing Not Current	FY 2009		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Acquisition: General	Internal Administrative, Internal Technical Assistance, Species Expert	This task was initiated in 2009, but is still in initial assessment stage.

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Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	2	44	Augment Current populations: Control alien weeds in new sites	Not Started			U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Management: Habitat Maintenance and Manipulation, Management: Predator and Competitor Control	Contract, Internal Field Assistance, Volunteer	This task has not been started due to limited material available in ex situ collections.
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	2	45	Augment Current populations: Select genetic stock for establishing new populations	Not Started			U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Management: Propagation, Management: Reintroduction	Contract, Internal Technical Assistance, Species Expert	
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	2	46	Augment Current populations: Transplant propagated individuals	Not Started			U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Management: Reintroduction	Contract, Internal Field Assistance, Volunteer	This task has not been started due to limited material available in ex situ collections.
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	3	51	Determine # of individuals needed for 200 year survival	Not Started			U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Other: Regulations, Research: Demographic Studies, Research: Habitat Status, Research: Population Surveys	Internal Technical Assistance, Species Expert	

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Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	3	53	Revise recovery objectives	Ongoing Current	FY 2010		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Other: Regulations, Research: Demographic Studies, Research: Habitat Requirements, Research: Habitat Status, Research: Population Surveys	Internal Technical Assistance, Species Expert	This task has been initiated as part of a revision of all Kauai endemic species in the Kauai island-wide recovery plan.
Na'ena'e (Dubautia pauciflora), Haha (Cyanea undulata), No common name (Viola helenae), Kamakahala (Labordia lydgatei), No common name (Hesperomannia lydgatei)	3	54	Determine if human-induced changes in climate will affect populations	Not Started			U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Research: Other Information	Graduate Student, Internal Technical Assistance, Species Expert	